

ABSTRACT

A method of manufacturing a micro tunnel-junction circuit capable of remarkably relieving the limitation of a circuit pattern to be manufactured and remarkably relieving the limitation of a metallic material to be used. In the method, a three-layer structure is formed by laminating a first metal, an insulator, and a second metal on a substrate in this order, a narrow wall part is formed by cutting the three-layer structure in the depth direction by using a converging ion beam, at least one laterally passed through-hole is formed in the wall part by using the converging ion beam, and at least one recessed portion positioned adjacent to the hole is formed by cutting the upper surface of the wall part in the depth direction. The hole is a through-hole starting at the position of the head of the second metal to the position of the head of the substrate and the recessed part is formed to be recessed from the upper surface of the wall part into the first metal.